Bushfire in Australia: a vision for 2020

All Australians understand, accept and respect bushfires and know that they will continue to occur. We have drawn on Indigenous, local and scientific knowledge in learning to live with bushfires. Communities understand that the risk, and the responsibility for bushfire mitigation and management, is shared by individuals, landholders, communities, fire and land management agencies, researchers, and governments.

Australians recognise that bushfire can be damaging but that planned fire can also be beneficial, by sustaining ecological processes or by reducing fuels—thus reducing the risk of uncontrollable bushfires. Decisions about bushfire mitigation and management are made within a risk-management framework, known as the 5Rs—**R**esearch, information and analysis; **R**isk modification; **R**eadiness; **R**esponse; and **R**ecovery.

Research, information and analysis. All schoolchildren learn about bushfire survival and the role of fire in our environment. Governments, agencies and community groups guide good practice in preparing for bushfire. Coordinated bushfire research redresses gaps in our understanding of bushfires and their effects, is at the international forefront of knowledge, and informs management and policy. A 'Centre for Lessons Learnt' distils and disseminates lessons from major fire events.

Risk modification. There is a cooperative approach to risk reduction. Arson is a rare source of ignition. Fuel reduction and ecological burning are based on fuel management zones that link landscape management to the protection of community, environmental and economic assets. There is greater knowledge, awareness and trust between rural landholders, public land managers, communities and fire agencies. Systematic planning, development constraints and building codes in bushfire-prone areas reduce risk to life and property.

Readiness. As individuals and as a community, Australians know how to defend themselves and their property effectively against fire. The previous culture of complacency, blame and risk avoidance has been replaced by shared understanding and valuing of all assets, cooperative assessment of the most suitable risk-reduction measures, and shared responsibility for action.

Response. Bushfire response is planned, coordinated and managed by the states and territories, and cooperative arrangements facilitate cross-border assistance. Aerial firefighting resources are coordinated nationally. State and territory bushfire services operate within integrated emergency services, structured for a range of hazards. Volunteers are integral to rural firefighting. The states and territories deliver training to national standards, and there are many examples of interagency and interstate deployments of personnel affording greater experience. Volunteers are valued, encouraged and recognised.

Recovery. Recovery occurs concurrently with the response effort and focuses on individual support, community and economic renewal, and environmental restoration. Part of recovery is learning from the experiences of each fire event, and from other emergencies, to maintain our awareness and improve our knowledge, planning and responses.

Summary: living with fire

Bushfires are an inherent part of the Australian environment. We cannot prevent them, but we can minimise the risks they pose to life, property and infrastructure, production systems, and the environment.

Australia has a large and very capable force of volunteer and career firefighters, advanced firefighting technologies, and significant firefighting resources. But the geographical scale of our country, the large and expanding rural–urban interface, and the potential for rapid bushfire development and spread under adverse weather conditions mean that individual Australians cannot rely solely on fire agencies to protect their lives and property from bushfires.

Bushfires have a fundamental and irreplaceable role in sustaining many of Australia's natural ecosystems and ecological processes and are a valuable tool for achieving land management objectives. However, if they are too frequent or too infrequent, too severe or too mild, or mistimed, they can erode ecosystem health and biodiversity and compromise other land management goals.

We have been learning to live with fire since the first Australians arrived on our continent. We need to continue, and enrich, that learning process in contemporary circumstances and be able to adapt our planning and responses to change. This report seeks to help all Australians meet these challenges.

The Inquiry

The Inquiry responded to its terms of reference by focusing on the following themes: risk factors contributing to bushfires; bushfire mitigation strategies and their impacts; the impacts of bushfires on the environment, life, property and the economy; resources and infrastructure for fire mitigation and firefighting; efficiency of resource use and the best use of technologies; cooperation between agencies and jurisdictions; and examples of good practice.

Building on the extensive body of knowledge about bushfire in Australia and on the reports of previous bushfire inquiries, we adopted an evidentiary approach and a strategic national outlook. Some of our recommendations can be implemented quickly, but we consider that many important outcomes are achievable only in the longer term. Achieving them will require strategic and sustained investments, cultural and institutional change, and leadership from all Australian governments.

The recent report to the Council of Australian Governments, *Natural Disasters in Australia*, proposed reform of mitigation, relief and recovery arrangements for all natural disasters. Our philosophy, approach and recommendations complement those advanced in that report.

The 2002–03 fire season

The Inquiry's establishment was prompted in part by the severity of the 2002–03 fire season, between May 2002 and April 2003, and its impacts. Severe drought conditions and above-average temperatures prevailed across much of Australia, creating high-risk conditions. Ten people lost their lives; city suburbs, rural towns, farms, plantation forests and infrastructure were damaged; property losses exceeded $400 million; and there were significant environmental impacts. In southern Australia the fire season was characterised by both campaign fires—bushfires extending over a prolonged period—and extreme events on particular days during the campaign fires.

Nationally, over 54 million hectares were affected by bushfires. In this fire season, as in others, the greatest area burnt was in Australia's rangelands and northern savannas, where extensive bushfires affected particularly Indigenous communities, pastoralists and environmental assets. The area burnt in the northern Australian savannas in 2002–03 was less than that burnt in the two preceding seasons, but Central Australia experienced the greatest area burnt in 25 years as a consequence of high fuel loads following good rains in previous years.

Aspects of the 2002–03 fire season in south-eastern Australia were reminiscent of other seasons that have generated inquiries, among them 1939 in Victoria, 1961 in south-west Western Australia, 1967 in Tasmania, 1983 in Victoria and South Australia, and 1994 and 2001 in New South Wales. This pattern is a reminder that, while the 2002–03 season was severe, it was not unprecedented or even unusual in the longer sweep of history in such a fire-prone continent.

We can expect other severe fire seasons in the future; they may even become more frequent and more severe under changed climatic conditions.

Learning how to live with bushfire

Given the inevitability of bushfires, all Australians must learn how to live with them. This has been recognised at least since the Streeton Royal Commission of 1939, which identified both school and adult education as 'the best means of fire prevention and protection'. Despite achievements in other areas of education about living safely in the Australian environment, and progress on particular aspects of education and awareness of bushfires in individual states and territories, a nationally consistent bushfire education strategy that reaches and informs all Australians is yet to be implemented.

Australia needs a nationwide program of school and community education about bushfires—the fire history of the continent, the role of bushfire in the Australian environment, and how to prepare for bushfires and survive them. As a result of this learning, Australians will be better able to protect their own life and property and those of others. There is strong evidence that well-informed and well-prepared communities, with realistic expectations both of the likely impacts of bushfire and of the suppression capabilities of fire services, can minimise the impacts of bushfires.

A well-informed community will also appreciate that there are 'good' as well as 'bad' bushfires. Good bushfires help to meet land management and fire mitigation

objectives without adverse impacts on people, property or the environment. Bad bushfires threaten lives, property or the environment and can do so in ways that are difficult to control.

We should grasp opportunities to integrate learning about bushfires with learning about other hazards, to learn from and with Indigenous Australians, and to draw on scientific research and educational innovation.

A risk-management framework

A structured risk management process, consistent with the Australian Risk Management Standard, offers the best framework for making strategic and operational decisions about bushfire mitigation and management. Emergency management in Australia has adopted one form of this framework; its elements are Prevention, Preparedness, Response and Recovery, or PPRR.

The Inquiry further developed and adapted the PPRR framework to a 5Rs framework—**R**esearch, information and analysis; **R**isk modification; **R**eadiness; **R**esponse; and **R**ecovery—which is a better basis for understanding the integrated elements of bushfire mitigation and management.

Application of the 5Rs framework should be informed by a thorough understanding of the full range of assets that are threatened by bushfire—life and property, infrastructure and production systems, and environmental values.

Research, information and analysis

Information and data, and their analysis and synthesis, are the basis for knowledge and learning from which we can continuously improve the effectiveness and efficiency of bushfire mitigation and management. Consistent data gathering and collation about bushfires across Australia have been limited, handicapping informed decision making.

Spatial data and its use in mapping products have become increasingly important for bushfire mitigation and management. The capture and provision of data and information relevant to bushfire mitigation and management are being greatly facilitated by the adoption of all-hazards and whole-of-government approaches by the Australian Government and the state and territory governments.

Advances in technology, analytical tools and communication (such as the increasing availability and quality of satellite remotely sensed data and its interpretation and communication to diverse audiences) are very important to bushfire mitigation and management. There has been good progress towards nationally consistent, widely available data and information in some arenas, but anomalies and gaps remain. These include a national program of fire regime mapping, establishment and maintenance of a suite of nationally consistent databases, establishment of a network of long-term ecological research sites, and integration of information gathering in an adaptive management process.

Research investment relevant to bushfire mitigation and management has been boosted by the establishment of the Natural Heritage Trust and relevant

cooperative research centres. Although these investments by the Australian Government and state and territory governments and their agencies are significant, there remain gaps and urgent priorities. For example, more research is needed on building design and materials, climate and climate change, fire behaviour and ecological responses, individual and community psychology and social processes, and Indigenous Australians' knowledge and use of fire.

Strategic research planning, and sustaining research capacity beyond the lives of the cooperative research centres are critical concerns and need to be addressed now if current research is to continue to inform bushfire mitigation and management.

Risk modification

Risk modification has three main elements:

- planning processes that ensure that built assets are not placed in areas of high fire risk and that structures meet standards of construction that reduce their vulnerability

- reducing the frequency of ignitions that result from arson and carelessness

- managing the landscape so as to minimise the risk of damage to life and assets.

Identification of assets and agreement about the most suitable and effective forms of risk modification for them underpin decisions about risk modification.

Land use planning, development controls and building standards have a central role in reducing the risk to people and property from bushfire. The Inquiry endorses the recommendation of the *Natural Disasters in Australia* report to the Council of Australian Governments in relation to land use planning, development controls and building standards.

Arson is a significant cause of bushfires. Reducing the frequency of ignitions that result from arson depends on effective education and policing and on community vigilance. There are a number of examples of successful arson-reduction programs. School and community education are the principal means of reducing the number of fires that arise from carelessness.

Modification of elements of the landscape is an important means of reducing risks to assets. Among the objectives of landscape modification are reducing the probability of a bushfire starting, slowing its spread, limiting its intensity so that it might be controlled, and maintaining ecological processes and biodiversity. Strategically planned and effectively implemented fuel reduction, usually but not only by burning, is the primary means of risk reduction.

There is no point in conducting fuel-reduction burning unless it is effective in reducing the risk to assets. There are many constraints on achieving fuel reduction on a large scale across the landscape. Some of these are operational; others are associated with environmental damage caused by too-frequent burning. Consequently, fuel-reduction burning should not be seen as a panacea: it needs to be used to address strategic priorities that respect the range of assets and values in

a landscape and minimise the risk to each of them. Effective risk reduction requires shared understanding of assets and shared responsibility for protecting them.

Creating a mosaic of fire regimes across a landscape—with fire intervals, seasons and intensities in the mosaic appropriate for particular ecosystems—appears to be the best means of sustaining biodiversity and should be a goal of both ecological and fuel-reduction burning. There will still be trade-offs, because fuel-reduction regimes that threaten biodiversity might have to be applied in particular circumstances to achieve adequate risk reduction.

We still have much to learn from Indigenous Australians about their knowledge and use of fire. Evidence from several parts of Australia shows that their understanding of fire can be integrated with current scientific knowledge and adaptive management to improve bushfire mitigation and management across the continent.

Readiness

Readiness describes everything that can be done before a bushfire event. It is just as important for individuals and communities as it is for fire and land management agencies. Relevant and effective community education and public information programs are therefore central to readiness. The 2002–03 fire season revealed some of the difficulties of achieving this, especially in ensuring that programs retain their relevance and impact during extended periods without major bushfires. Encouraging membership of volunteer rural fire brigades and the development of community-based fire groups are two important elements of maintaining bushfire readiness in the community.

An incident management team needs to be ready to provide comprehensive 'operational' information on the status of a bushfire, the response measures being taken, the areas potentially at risk, and preparations that members of the public can make. The media have a particularly important role to play in conveying accurate and timely information. All agencies involved in fire and recovery need to be fully prepared and able to call on additional resources as required.

Agencies need to be able to communicate readily with each other. There are still significant impediments to good communication, and the Inquiry supports the efforts of the National Coordinating Committee for Government Radio Communications to develop a national plan to ensure interoperability of emergency services radio communication across Australia.

Response

State and territory fire authorities are responsible for most aspects of operational response. The Inquiry supports the all-hazards approach to control and coordination of bushfire responses based on the AIIMS Incident Control System. Important elements of such a system are unity of command in large, complex, multi-agency bushfire responses and mechanisms for identifying and using local knowledge.

Rural fire agencies place strong emphasis on safety and training. The media and residents may also need training in fire-ground safety. Less experienced firefighters also need more structured programs so that they can gain operational experience.

There is currently no standard system across the states and territories for fire ban advice or for bushfire threat warnings. Given the mobility of the Australian population, especially in summer, the Inquiry supports the development of standardised national warning and alert systems.

Fire access trails and water access are important components of bushfire response that often receive too little attention. Although land management objectives can place constraints on the specific location of fire trails and stored water, these response components need to be strategically planned, mapped, marked and maintained.

The Defence organisation has the capacity and willingness to support bushfire fighting in emergency situations, but the limits to its potential contribution are generally not understood by the public. The operating arrangements for Defence assistance to the civil community are generally effective and well coordinated.

Aerial fire suppression is valuable technology when used as part of a coordinated strategy with firefighters on the ground. The Australian Government has displayed leadership in supporting the establishment of the National Aerial Firefighting Centre, and the Inquiry considers that the Government's support should continue, pending the outcomes of current research into the overall effectiveness of aerial fire suppression.

Residents need to be sufficiently well informed and prepared to be able to decide whether to evacuate when threatened by a major bushfire or to stay and defend their property. There should be a consistent national policy that is understood by residents as well as fire, police and emergency services personnel. Such a policy must be fully integrated with community education, so that residents can make informed decisions and avoid risky evacuation at the height of a fire event.

Recovery

Processes for recovery from major bushfires parallel those relevant to other natural disasters and should therefore be considered from an all-hazards perspective. There is a comprehensive, nationally agreed framework for recovery, the *Australian Emergency Manual – disaster recovery*, which should now be updated to incorporate lessons learnt from the recovery programs following the recent major bushfires and the outcomes of the review of community support and recovery arrangements by the Health and Community Services Ministerial Council.

This update should highlight the importance of adopting a whole-of-government approach; quickly implementing special arrangements for a particular bushfire event but ensuring an effective transition back to normal arrangements; helping affected people to navigate the maze of support structures; and encouraging the insurance industry to provide consistent and clear advice to policy holders.

Governance and coordination

Major bushfires do not recognise local government boundaries, interstate borders or the distinction between private and public lands. As the size and impact of bushfires increase, each level of government is progressively engaged. The effectiveness of bushfire mitigation and management is determined by the degree of interaction within and between the three levels of government.

The development of policy on bushfire mitigation and management across Australian Government departments and agencies would be best coordinated by a senior-level committee. That committee could also coordinate advice on these matters to the Australian Emergency Management Committee and the augmented Australasian Police Ministers Council. The Inquiry also considers that a mechanism should be established for the Australasian Fire Authorities Council to provide advice to the Australian Emergency Management Committee.

Urban and rural fire agencies are drawing closer together in each jurisdiction, and operational coordination within land management organisations is improving. This trend is desirable, and the culture of cooperation must be extended throughout the organisations. Regardless of the structures in place, there must be a single, unified command system for bushfire events and integrated operational planning and response.

Knowledge, learning and training

Learning and training are fundamental to bushfire mitigation and management and are relevant for volunteer and career firefighters as well as land managers. Learning and training take various forms—general schooling and education, competency-based qualifications under the Australian Quality Training Framework, tertiary education courses, interaction with Indigenous Australians, and through the culture of a 'learning organisation'.

In terms of competency-based training, retaining a public safety focus is preferable to integration into a wider public sector context. The Public Safety Training Package is being used widely for volunteer and career firefighters. The Inquiry suggests that a National Safety and Security Skills Council be formed, under the Australian National Training Authority, to administer this Package and to continue its development.

Most university education about bushfires focuses on particular aspects such as fire ecology or land management. There are few programs that deal with bushfire mitigation and management as an integrated whole. Several cooperative research centres are helping to redress this situation. There is a need for a nationally coordinated program of professional development relevant to the various aspects of bushfire mitigation and management. Such a program would best be developed and run by the Australasian Fire Authorities Council and Emergency Management Australia, in partnership with relevant state and territory agencies and education and research institutions.

A 'learning organisation' has processes for capturing and sharing the lessons from recent events. To add most value, learning also needs to be shared among organisations. The Inquiry considers that Australia would be very well served by

the establishment of a Centre for Bushfire Lessons Learnt, to build on existing institutions and arrangements and to draw on the knowledge and experience of Indigenous Australians.

Rural fire service volunteering

Over 30 per cent of Australians over the age of 18 years do volunteer work of some kind. Emergency services volunteers make a major contribution to the safety and wellbeing of Australians. About a quarter of a million such volunteers, mostly in the rural fire services, contribute about 21.5 million hours annually. This effort forms the foundation of Australia's emergency service response. The Inquiry found that a wide range of methods are used to acknowledge the contributions of volunteers; the report catalogues and comments on these.

It is important for the states and territories to ensure that the demands made of volunteers are reasonable, especially during bushfire campaigns of long duration. This includes ensuring that there is a matching of volunteer availability with the assessment of the probable extent of deployment, having processes in place for volunteer support, and recognising the generosity and cooperation of volunteers' employers.

Recent increases in levels of training required to meet national competencies are making membership of rural fire brigades too onerous for some volunteers. It would be valuable to develop a brigade classification structure and training regime that provides greater flexibility for these volunteers.

Reviewing performance

The Inquiry proposes that a common set of bushfire good practice indicators be developed within a risk-management framework, to provide consistency of reporting and review.

Major bushfire events are typically followed by a cycle of government and community responses—bushfire event → accusations and blame → inquiry and review → increases in funding → initial change and compliance → coronial inquiry → complacency → the next event. Some elements of this cycle are positive and constructive; others are not.

Investigations of bushfires should be completed soon after the event. The public must be satisfied that deaths and other matters of concern are properly explored, and individuals need to be held accountable for their decisions. Reviews and investigations should focus on learning, rather than on blame. Adoption of a common set of national indicators of good practice—with subsequent state and territory review against them—will provide transparent measures of government, agency and community performance, potentially reducing or even eliminating negative aspects of the bushfire cycle and improving overall bushfire mitigation and management.

The Inquiry notes that the coronial inquest process can be adversarial, drawn-out and expensive and therefore less helpful in a review-and-learning process.

National bushfire principles

There is no consistently expressed common understanding of our approach to bushfire mitigation and management in Australia. This is a poor foundation for the future. A clear statement of principles is needed if we are to achieve the following objectives: establish shared goals; communicate the goals widely; develop a common framework for mitigation and management; ensure cooperative responses across borders and tenures; and improve assessment and reporting of performance and compliance with standards.

The Inquiry recommends that the Council of Australian Governments adopt a statement of national principles for bushfire mitigation and management; this report suggests the following indicative national bushfire principles.

Indicative national bushfire principles

Bushfires are understood, accepted and respected
Like other natural hazards, bushfires cannot be prevented. In many instances, bushfires are an important tool to assist in achieving land management objectives. The impact of unplanned fires needs to be minimised through effective action based on learning and understanding. This also requires strong self-reliance.

Shared responsibility
A philosophy of responsibility shared between communities and fire agencies underlies our approach to bushfire mitigation and management. Well-informed individuals and communities, with suitable levels of preparedness, complement the roles of fire agencies and offer the best way of minimising bushfire risks to lives, property and environmental assets.

Decisions within a risk management framework
No single action will lead to the elimination of bushfire risk. The best approach to minimising risk is to make decisions about bushfire mitigation and management within an integrated risk management framework.

Integration of learning and knowledge
Analysis of fire events is based on operational and scientific evidence and research. This should be informed by extensive and consistent national data, including fire regime mapping. The best results will be achieved by integrating all forms of knowledge, and good information about fire history, with analysis at the local and regional levels.

Manage fire according to the landscape objectives
Australia has a great diversity of climates, environments, land uses and built assets. Fire management objectives and outcomes will vary across landscapes and over time. Clear agreed objectives and an adaptive management approach are required for implementation.

Consistency of purpose and unity of command
There needs to be consistency of purpose during bushfire mitigation and unity of command for all fire response, irrespective of organisational structures.

Protection of lives as the highest consideration
Firefighter and community safety must be at the forefront of bushfire mitigation and management deliberations. Although there should always be a balance between safety, effective response and environmental considerations, it is personal safety that must be the greatest concern.

Monitoring performance
The states, territories and local governments need to regularly review their performance against these principles and other appropriate indicators. Performance review should not be allowed to wait until after a major bushfire event. If the principles are to improve performance and bring about change, they must be monitored on a regular basis.

Findings and recommendations

1 Bushfire in Australia

There are no findings or recommendations in this chapter.

2 The 2002–03 fire season

2.3 Distinctive aspects of the 2002–03 fire season

Finding 2.1

The 2002–03 fire season, extending from May 2002 in northern Australia to April 2003 in southern and western Australia, was characterised by:

- a historically significant fire season

- the potential to be the most severe fire season in all states and territories for between 20 and 40 years

- major fires in all jurisdictions, affecting in excess of 54 million hectares, with vast areas being affected in central and northern Australia

- major campaign fires in New South Wales, the Australian Capital Territory and Victoria and a major disaster in Canberra on 18 January 2003.

In total, these fires claimed 10 lives, destroyed over 1200 structures, killed over 21 000 head of livestock, and resulted in great environmental damage and estimated insurance losses in excess of $400 million.

The principal reasons for the severity of the 2002–03 fire season were the prolonged drought over much of Australia, which dried out available grassland and forest fuels, combined with above-average temperatures and a much higher incidence of lightning strikes.

3 Learning how to live with fire

3.2 School-based bushfire education

Recommendation 3.1

The Inquiry recommends that state and territory governments and the Australian Government jointly develop and implement national and regionally relevant education programs about bushfire, to be delivered to all Australian children as a basic life skill. These programs should emphasise individual and household preparedness and survival as well as the role of fire in the Australian landscape. Program effectiveness should be audited by each state and territory after five years, with a national report to be provided to the Council of Australian Governments.

3.3 Community-based education

Finding 3.1

Well-informed and well-prepared individuals and communities complement the roles of land managers and fire agencies. This shared responsibility offers the best way of minimising risks to people, property and the environment. Effective community education, awareness and engagement programs targeted to the needs of local communities are required to achieve this objective.

4 The risk-management process

4.3 The 5Rs: a risk-management framework for bushfire

Recommendation 4.1

The Inquiry recommends that a structured risk-management process based on the Australian Standard for Risk Management be further developed and applied in all aspects of bushfire mitigation and management, informed by a thorough understanding of the full range of assets.

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5 Research, information and analysis

5.2 Data and information relevant to bushfire mitigation and management

Finding 5.1

The quality and currency of digital mapping databases are critical for the provision of up-to-date mapping products. The Inquiry supports and encourages state and territory and Australian Government initiatives to digitise existing spatially explicit data and develop digital mapping databases according to nationally agreed procedures and standards and to make these products available in operationally useful form. The Inquiry strongly supports the role of national bodies and representative groups in facilitating nationally consistent and accessible spatial data and data products.

Finding 5.2

The Inquiry supports the use of remotely sensed data to provide more extensive, objective and timely data for informing strategic and operational decisions about fire mitigation and management. It also supports the development and delivery, in user-friendly forms, of data products that facilitate access by the community, as well as the staff of fire, land management and emergency services agencies.

Finding 5.3

The Inquiry notes the following:

- the fundamental importance of high-quality, locally specific weather information and forecasting services to bushfire mitigation and management

- the high quality of services provided by the Bureau of Meteorology

- the potential cost and the consistency implications of some weather services being provided by commercial suppliers.

The Inquiry supports the following:

- the continuation and further enhancement of Bureau of Meteorology fire weather forecasting

- the resourcing of the Bureau at a level sufficient for it to maintain and develop these services, particularly at the regional level

- further exploration of the potential benefits of a more strongly coordinated national fire weather forecasting system.

Recommendation 5.1

The Inquiry recommends the provision of additional resources jointly by the Australian Government and the state and territory governments for the following purposes:

- to accelerate the research necessary for the characterisation of fuel loads and dynamics for Australian ecosystems (both natural and exotic), the characterisation of fire behaviour and ecological responses, the development of 'burning guides' from this information, and the compilation of this information and knowledge in nationally accessible databases

- the establishment of a national network of long-term ecological research sites to provide a basis for long-term monitoring of the impacts of fire regimes and fire events.

Recommendation 5.2

The Inquiry recommends that the Australian Government and the state and territory governments jointly provide additional resources and work in partnership to establish and refine a national program of fire regime mapping.

Finding 5.4

The Inquiry supports the development of whole-of-government initiatives to improve aspects of information and data collection, storage, exchange and reporting. These initiatives should recognise the agencies involved in bushfire mitigation and management and take into account the particular characteristics of bushfires in the design and implementation of reporting systems.

Finding 5.5

The Inquiry strongly supports further capacity building relevant to bushfire data and information among communities and the public and private sectors.

> **Recommendation 5.3**
>
> The Inquiry recommends that the Australian Government and the state and territory governments continue to develop national consistency in data sets relevant to bushfire mitigation and management under the Australian Spatial Data Infrastructure framework, and within this context, identify and resource national bushfire data set coordinators.

5.3   Research relevant to bushfire mitigation and management

Finding 5.6

A national coordinating mechanism representing the principal interests and organisations in bushfire research is necessary to maximise the national benefit from investments in bushfire research.

> **Recommendation 5.4**
>
> The Inquiry recommends that the Australian Government, in partnership with the states and territories and relevant research organisations, develop a strategy for sustaining bushfire research and capacity building, in the context of a risk-management approach to bushfire mitigation and management.

6   Risk modification

6.1   Planning and building in bushfire-prone areas

Finding 6.1

The Inquiry supports the view, expressed in *Natural Disasters in Australia*, that land use planning that takes into account natural hazard risks is the single most important mitigation measure for preventing future disaster losses (including from bushfires) in areas of new development. Planning and development controls must be effective, to ensure that inappropriate developments do not occur.

> **Recommendation 6.1**
>
> The Inquiry endorses the recommendations in the *Natural Disasters in Australia* report relating to disaster mitigation through land use planning and development controls and recommends that the states and territories continue to make their advisory and statutory measures more effective.

Finding 6.2

Adequate resourcing of local government is essential for robust and competent bushfire planning and decision making and for ensuring continuing maintenance of protection zones and adherence to development controls.

> **Recommendation 6.2**
>
> The Inquiry recommends that the review of the Building Code of Australia, with particular reference to the Construction of Buildings in Bushfire Prone Areas Standard—to deal with resistance to natural hazards, including bushfires—be completed by the Australian Building Codes Board as a matter of priority.

6.2 Arson

Finding 6.3

Arson remains a significant risk for bushfire ignitions, and the states and territories must continue to direct resources towards deterring people from engaging in this illegal activity. National information sharing will assist, although a national program is not justified.

6.3 Landscape management for bushfire risk: an overview

Finding 6.4

There needs to be a shared understanding and valuing of assets in relation to bushfire mitigation and management. There also needs to be better recognition of the fact that prescribed burning is a complex matter—ecologically and operationally—and that a variety of prescribed fire regimes might be necessary to meet a range of objectives.

6.4 Risk modification for community assets

Finding 6.5

There is a need to develop ways of assessing the effectiveness of fuel-reduction programs in terms of the resultant degree of reduction in risk.

Finding 6.6

Comparing the gross area treated annually in fuel-reduction burning—that is, for a whole agency, region or state—with a published target is not a good basis for assessing performance and is likely to be counterproductive.

6.5 Risk modification for environmental assets

Finding 6.7

The Inquiry supports the adoption of an adaptive management approach to setting fire regimes that are appropriate for biodiversity conservation. Such an approach should:

- make explicit the biodiversity objectives

- recognise lack of knowledge and clarify questions that need to be answered

- design burning prescriptions that can answer these questions

- devise and fund monitoring and other data-collection activities

- review and communicate results

- use the new knowledge to modify the management prescription.

Finding 6.8

More research and monitoring are required in order to understand the effects of fuel-reduction burning and large-scale bushfire events on water quality and quantity in catchment areas.

Finding 6.9

The potential for a reduction in air quality is one of several impediments to achieving necessary levels of fuel-reduction burning. There is a trade-off between tolerating reduced air quality and achieving risk reduction by fuel-reduction burning. Resolution of the question requires both more research and effective dialogue with the community.

Finding 6.10

Long-term strategic research, planning and investment are necessary if the Australian Government and state and territory governments are to prepare for the changes to bushfire regimes and events that will be caused by climate change.

Finding 6.11

There is a potential trade-off between maximising native pasture production by using fire and avoiding biodiversity loss. Too-frequent use of fire, and too much uniformity in fires, can result in loss of biodiversity in a region.

6.6 Land managers' responsibilities

Recommendation 6.3

All states and territories should have a zoning approach to the classification of fuel management areas, with clear objectives for each zone. The process should be applied at the landscape scale, and all land managers and the community should be involved.

Finding 6.12

Natural resource management regional plans developed under the National Heritage Trust should take bushfire management into account and be consistent with the bushfire risk–management process.

6.7 Indigenous Australians' use of fire

Recommendation 6.4

The Inquiry recommends that fire agencies, land managers and researchers continue to work in partnership with Indigenous Australians to explore how traditional burning practices and regimes can be integrated with modern practices and technologies and so enhance bushfire mitigation and management in current Australian landscapes.

7 Readiness

7.1 Community education, information and action

Finding 7.1

The community information and engagement programs conducted by the states and territories are generally comprehensive. Their effectiveness depends on community uptake and commitment. Community surveying needs to be done regularly to ensure that programs retain their relevance and are being delivered in ways that maximise community participation and understanding.

Recommendation 7.1

The Inquiry recommends that each state and territory formalise non-exclusive agreements with the Australian Broadcasting Commission as the official emergency broadcaster, providing an assured standing arrangement. Similar protocols with commercial networks and local media should also be established.

7.2 Operational communications

Finding 7.2

The Inquiry supports the efforts of the National Coordination Committee for Government Radio Communications in seeking to develop a national strategic plan to enable interoperability of emergency service radio communication across Australia.

7.3 Surge capacity

Finding 7.3

Emergency services' readiness for and response to bushfires is reliant not only on the movement and concentration of firefighting resources but also on the assured availability of recovery services and infrastructure support such as telecommunications. Community service obligations of suppliers should include this requirement.

8 Response

8.1 Operational response

Finding 8.1

The current all-hazards control and coordination arrangements at the national and state and territory levels are adequate for the operational management of bushfires in Australia.

Finding 8.2

Effective management of large rural fire incidents remains one of the greatest challenges for fire authorities. If bushfire management performance and outcomes are to improve, the necessary focus and resources must be directed to this end. The AIIMS Incident Control System offers the means to achieve that.

Recommendation 8.1

The Inquiry recommends that implementation of a single Incident Control System for the management of multi-agency emergency incidents be further examined by the Australian Emergency Management Committee, with a view to developing one nationally agreed system.

Recommendation 8.2

The Inquiry recommends that the AIIMS Incident Control System be adjusted so that it adequately allows for the identification and integration of local knowledge during firefighting operations.

Recommendation 8.3

The Inquiry recommends that a central function of the AIIMS Incident Control System be the flow of adequate and appropriate information to threatened communities, government, police and other emergency services authorities. The incident controller should have overall responsibility for this.

Recommendation 8.4

The Inquiry recommends that all Australian fire authorities adopt and continue to use the AIIMS Incident Control System in accordance with Australasian Fire Authorities Council guidance and policies.

Finding 8.3

Failure to acknowledge and use local knowledge erodes the credibility of fire agencies and the AIIMS Incident Control System, ultimately reducing the effectiveness of the national bushfire-response effort.

Finding 8.4

The Inquiry commends the 'safety first' approach adopted by fire agencies. This approach does, however, highlight the need for effective mentoring to complement formal training. It is not sufficient to rely on technical qualifications and competencies alone.

Recommendation 8.5

The Inquiry endorses the recommendations on warning systems in the report *Natural Disasters in Australia*. In addition, it recommends as follows:

- that all fire ban advice and subsequent 'bushfire threat warnings' related to specific fires be conveyed consistently in all states and territories, including the use of the Standard Emergency Warning Signal when lives or property are threatened

- that the final structure of the warnings be based on the findings of the Bushfire Cooperative Research Centre's project Communicating Risk to Communities and Others.

Finding 8.5

Fire access trails and water access are important, practical components of bushfire mitigation and management that are often inadequately considered. Consistent national markings adopted by all states and territories would benefit bushfire response, particularly for out-of-area fire crews.

Finding 8.6

- Defence has the capacity to provide valuable assistance in support of bushfire fighting, but it has a limited number of personnel with the necessary training to engage in direct firefighting operations. This is are not always well understood by the public and should be better explained by Defence.

- The operating arrangements for Defence assistance to the civil community are effective, as is the coordination of that assistance at the local Defence command level and through Emergency Management Australia for larger scale or longer duration events.

- Defence support during the 2002–03 fire season was in all cases effective and well received.

- Matters relating to the possible presence of unexploded ordnance on former Defence land are emotive locally and require direct consultations between the Department of Defence and the fire agency concerned.

8.2 Aerial operations

Finding 8.7

The Inquiry encourages the Bushfire Cooperative Research Centre to place considerable emphasis on the aerial suppression elements of its firefighting technology project, being conscious of the three years planned to achieve a result. Early publication of results from the study will be an important contribution to the future work of the National Aerial Firefighting Centre. The appropriate extent of aerial support for bushfire fighting cannot properly be determined until the Bushfire Cooperative Research Centre has completed its research.

Finding 8.8

The Inquiry supports the approach taken in Victorian performance agreements, whereby aerial providers receive a proportion of the contract price dependent on satisfactory performance in such areas as safety, load performance, availability and communications. The Inquiry encourages the Bushfire Cooperative Research Centre to review this approach as part of its research.

Finding 8.9

The Inquiry considers that aerial fire suppression makes an important contribution to bushfire-suppression operations. We support the approach that the most effective use of aerial bombing is during the early stages of fire development, to establish and maintain control lines and to protect assets in the path of a fire. The effectiveness of aerial bombing on more intense fires is questionable. All aerial operations are reliant on a coordinated approach with the firefighters on the ground.

Recommendation 8.6

The Inquiry recommends that the Australian Government maintain leadership of and support for the National Aerial Firefighting Centre for a further three years, until the Bushfire Cooperative Research Centre has finalised its research into the effectiveness of aerial suppression operations.

8.3   The decision to go early or stay and defend

Finding 8.10

A decision on the application of the 'go early or stay and defend' policy in circumstances where particular properties are not defendable is one for individual states and territories.

Recommendation 8.7

The Inquiry recommends as follows:

- that the approach that gives residents the option of leaving when confronted by a major bushfire threat or making an informed decision to stay and defend their home or property be adopted as a common national policy

- that implementation of a 'go early or stay and defend' policy must be fully integrated, with effective community education programs to improve preparedness and support timely and informed decision making.

Provision of training for fire, police and emergency services personnel in the application of the go early or stay and defend policy is essential if this approach is to be applied safely—with particular emphasis on minimising evacuations at the height of fire events. This should be supported by formal agreements between the relevant authorities.

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9 Recovery

9.5 Updating current recovery practice

Recommendation 9.1

The Inquiry recommends that the *Australian Emergency Manual – disaster recovery* be updated as a matter of priority by Emergency Management Australia, in consultation with the states and territories, the Australian Local Government Association, the Department of Transport and Regional Services and the Department of Family and Community Services, to incorporate:

- the lessons learnt from the recovery programs undertaken in relation to the recent major bushfires

- the outcomes of by the Community Services Ministers Advisory Council's review of community support and recovery arrangements.

9.6 Insurance

Finding 9.1

The insurance industry should provide improved and more consistent advice to policy holders on how to ensure that their level of insurance cover for buildings and contents meets the full replacement cost.

Recommendation 9.2

The Inquiry recommends that the Insurance Council of Australia be asked to review the industry's code of practice in response to the lessons learnt from the claims arising from the 2002–03 bushfires.

Finding 9.2

An opportunity exists for the insurance industry to engage in community bushfire awareness through offering a premium reduction for property owners who have taken bushfire preparedness measures. This may have only a limited impact, but any raising of community awareness is beneficial.

10 Governance and coordination

10.4 Policy development and coordination

Recommendation 10.1

The Inquiry recommends that the Australian Government formalise the coordination of the development of policy on bushfire mitigation and management across Australian Government departments and agencies and the provision of advice to the Australian Emergency Management Committee and the augmented Australasian Police Ministers' Council.

Finding 10.1

A single ministerial council overseeing bushfire mitigation and management is not practical because of varying considerations that must be taken into account by the different jurisdictions and government departments and agencies.

Recommendation 10.2

The Inquiry recommends that the Australasian Fire Authorities Council be co-opted as an adviser to the Australian Emergency Management Committee whenever bushfire mitigation and management are to be discussed.

Finding 10.2

Urban and rural fire agencies are drawing closer together, and operational coordination within land management organisations is improving. Much has been achieved in the last 20 years. This trend should be encouraged: it reduces operational vulnerability during emergencies and provides the best possible service to communities. Regardless of the structure in place, though, a single, unified command and integrated operational planning and response must exist.

10.5   Common acquisition of equipment

Finding 10.3

The potential savings from collective purchases of major equipment items between states and territories is extensive and should be explored through the Australasian Fire Authorities Council.

11   Knowledge, learning and training

11.1   Learning and training under the Australian Quality Training Framework

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Recommendation 11.1

The Inquiry recommends that the Australian National Training Authority establish a National Safety and Security Skills Council to continue the development and administration of the Public Safety Training Package, including competencies and qualifications relevant to bushfire mitigation and management.

Recommendation 11.2

The Inquiry recommends that the states and territories and the Australian National Training Authority provide additional funding, as necessary, to registered training organisations to support the development and delivery of learning and training resources to all firefighters.

11.4 Further professional development

> **Recommendation 11.3**
>
> The Inquiry recommends that the Australasian Fire Authorities Council and Emergency Management Australia—in partnership with state and territory agencies and other education and research institutions—coordinate a national program of professional development focused on bushfire mitigation and management. Under the program, partners would deliver nationally coordinated professional development services to all jurisdictions.

11.6 A Centre for Bushfire Lessons Learnt

> **Recommendation 11.4**
>
> The Inquiry recommends that the Council of Australian Governments support and fund the establishment of an Australian Centre for Bushfire Lessons Learnt, for an initial period of five years.

12 Rural fire service volunteering

12.4 Volunteer representation

Finding 12.1

Existing state and territory arrangements for the representation of rural fire service volunteers are sound and provide an appropriate vehicle for volunteer consultation at agency and government levels. Questions of national significance should be directed through Volunteering Australia.

12.5 Legal protection and compensation

Finding 12.2

The Inquiry is satisfied that existing state and territory legislation dealing with occupational health and safety is sound and that the effort required to achieve a nationally uniform approach is not warranted. In other areas where volunteer firefighters may be liable, the Inquiry is satisfied that volunteers do not face greater exposure than other citizens. We do, however, urge the states and territories to maintain a process of review, to ensure that judicial interpretations are reflected in policy and procedures and that volunteers are not disadvantaged, particularly when they deploy interstate.

12.7 Tax concessions for volunteers

> **Recommendation 12.1**
>
> The Inquiry recommends that an opportunity for reimbursement of out-of-pocket expenses should be available for each volunteer rural fire agency. In addition, the Council of Australian Governments should decide on the question of tax concessions as raised in the paper prepared by PKF Chartered Accountants on behalf of the Western Australian Government.

12.8   Support for employers of volunteers

Finding 12.3

The Inquiry commends employers of emergency services volunteers for their contribution in allowing volunteers to deploy during emergency events. Their contribution is critical to the viability of volunteer fire brigades and needs to be recognised at every opportunity.

12.9   Commonwealth legislation

Finding 12.4

Access to Centrelink payments for volunteers deployed on campaign fires and other people who are displaced or cut off by fires was a problem in some states. The Inquiry considers this matter should be amenable to resolution through liaison at the appropriate level between state and territory and Australian Government officials.

12.10   Training of volunteers

Finding 12.5

The Inquiry received no information to suggest that state and territory rural fire services would benefit from the recognition of their volunteers as trainees. There was concern that such a change might lead to fire agencies losing control of key training responsibilities. On the basis of the available information, the Inquiry does not support this proposal.

12.11   Recruitment and retention of volunteers

Finding 12.6

The Inquiry endorses the Bushfire Cooperative Research Centre's volunteerism research project. Consideration should be given to expanding the project to include an examination of the professional development needs of managers of volunteers.

12.12   Models of rural fire service volunteering

Finding 12.7

Use of a brigade classification structure based on risk assessments is a sound approach, providing greater flexibility for volunteer commitment, particularly for rural volunteers who are unlikely to fight bushfires outside their local area.

13 Reviewing performance

13.2 Indicators of good practice

> **Recommendation 13.1**
>
> The Inquiry recommends that the states and territories agree to a common set of national bushfire indicators of good practice, based on the five mitigation and management factors it has identified—the 5Rs. These indicators, together with an assessment against the proposed national bushfire principles, would provide a consistent framework for review and reporting in each state and territory.

13.4 Coronial Inquiries

> **Finding 13.1**
>
> All reviews and investigations into bushfire events, at any level—internal or independent—need to focus on learning not blame. The inquiry approach needs to focus on this outcome, in the interests of all involved. Coronial inquests into bushfire matters other than deaths may not be the most suitable form of inquiry.

14 National principles for bushfire mitigation and management

14.1 Why national principles are needed

> **Recommendation 14.1**
>
> The Inquiry recommends that the Council of Australian Governments adopt a statement of national principles as the framework for the future direction of bushfire mitigation and management in Australia.